REMARKS

This Amendment is being filed in response to the Office Action mailed October 12, 2007, which has been reviewed and carefully considered. Reconsideration and allowance of the present application in view of the amendments made above and the remarks to follow are respectfully requested.

Claims 1-5, 11-13 and 15-16 remain in this application, where claims 6-7, 9-10 and 14 are withdrawn and claim 8 had been canceled without prejudice.

In the Office Action, claims 1-5, 11-13 and 15-16 are rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement. Without agreeing with the Examiner, and to advance prosecution and expedite allowance of the present application, the specification has been amended to include the features of original claim 8. Thus, no new matter is introduced. It is respectfully submitted that the specification complies with the written description requirement, and reasonably conveys that the inventor, at the time of the application was filed, had possession of the claimed invention. Accordingly, withdrawal of this rejection to the claims 1-5, 11-13 and 15-16 is respectfully requested.

In the Office Action, claims 1-5 are rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. Patent No. 6,417,127 (Yamamato). Further, claims 11-13 and 15-16 are rejected under 35 U.S.C. §102(a or e) as allegedly anticipated by or rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yamamato. In addition, claims 11-13 and 15-16 are rejected under 35 U.S.C. §102(b) as allegedly anticipated by JP 6-211569 (Toyonaga). It is respectfully submitted

that claims 1-5, 11-13 and 15-16 are patentable over Yamamato and Toyonaga for at least the following reasons.

Yamamato is directed to a polycrystalline ceramic where, as shown in Tables 5-6, adding ZrO_2 **reduces** linear transmittance from 40% to 25% as compared to a typical ceramic having MgO. In addition to deterioration of the linear transmittance, the Yamamato disclosure of ZrO_2-doping **deteriorates all measured properties**, such as total transmittance, strength, hardness, wear resistance (cutting distance), etc. as shown in Tables 6 and 10. Table 10 shows that increasing the particle size from 0.48μm and the ZrO_2 amount from 0.05 mol% (Tables 5-6) to a particle size from 1.50μm and to a ZrO_2 amount of 2.60 mol% has no effect on the linear transmittance which remains at 25%. However, adding more ZrO_2 namely to 7.3mol% (test piece 29 in Tables 9-10), where the particle size is 1.00μm dramatically reduces transmittance to 2%. Further, Toyonaga is completely silent and does not disclose or suggest any ZrO_2.

It is respectfully submitted that Yamamato, Toyonaga and combination thereof do not teach or suggest the present invention as recited in independent claim 1, and similarly recited in independent claim 11 which, amongst other patentable elements requires (illustrative emphasis provided):

> wherein the alumina contains a concentration from 0.1 to 0.5 wt-% inclusive ZrO_2 as an additive and has an average crystal size≤2 μm, a relative density higher than 99.95%, and wherein **the ZrO_2 additive has an average particle size of at most 100 nm**.

Yamamato is completely silent does not teach or suggest that the ZrO_2 additive has an average particle size of at most 100 nm. Surely, if having a ZrO_2 additive with an average particle

size of at most 100 nm was obvious, then Yamamato would have described it, since Yamamato itself strives to find a polycrystalline ceramic having suitable properties. Despite disclosing many different polycrystalline ceramics, and forming many test samples, where up to 29 test pieces are tested, there is still no teaching or suggestion in Yamamato of the particular polycrystalline alumina components recited in independent claims 1, 6 and 11. In fact Yamamato is the very same background prior art described on page 3, lines 7-18, namely, EP1053983.

As described on page 3, lines 10-15 of the present application, it was believed that adding ZrO_2 as a dopant degrades optical transmittance. Further, as described on page 4, liens 1-5, it was unexpected to achieve a transparent ceramic despite the presence of zirconia additives, so long as the proper amount or concentration and size are used. In addition, Yamamato teaches that adding ZrO_2 degrades transparency thus teaching away from the present invention as recited in independent claims 1 and 11.

Further, Applicants respectfully refute the allegation on page 4 of the Office Action that "the particle size of the zirconia is to the starting material not the claimed product." As specifically recited on page 9, lines 9-20 of the specification(illustrative emphasis provided):

> The wet cast bodies were dried in ambient air for 2 days and then annealed at 800°C. in air to remove the organic additives. During sintering in air for 2 h at 1340°C. the relative density of the ZrO_2-doped samples was increased to 97%, whereas without ZrO_2 a lower temperature of 1290°C. was sufficient to obtain a closed porosity at a density of 96%. A final density of >99.9% was achieved by hot isostatic pressing (HIP) in argon at 1300°C/12 hours for the ZrO_2-doped material. Without ZrO_2 doping the HIP conditions were 1200°C/12 h. The average crystal sizes of the transparent corundum microstructures are given by Tab. IV, showing optical data of MgO-doped Al_2O_3 samples (0.03% MgO), some of them co-doped with zirconia, after HIP and after annealing. After annealing at 1350°C, only the microstructures without ZrO_2 exhibit some larger crystals i.e.

>1.3 μm. The particle sizes of most of the ZrO_2 crystals **after HIP** range between 30 and 100 nm.

After HIP, the diameter of the discs was 28 mm at a thickness of 3 mm.

Thus, **after HIP** where the final product is formed, such as discs, the final product includes ZrO_2 crystals mostly having particle sizes in the range between 30 and 100 nm.

Based on the foregoing, it is respectfully submitted that independent claims 1 and 11 are allowable, and allowance thereof is respectfully requested. In addition, it is respectfully submitted that claims 2-5, 12-13 and 15-16 should also be allowed at least based on their dependence from independent claims 1 and 11.

In addition, Applicants deny any statement, position or averment of the Examiner that is not specifically addressed by the foregoing argument and response. Any rejections and/or points of argument not addressed would appear to be moot in view of the presented remarks. However, the Applicants reserve the right to submit further arguments in support of the above stated position, should that become necessary. No arguments are waived and none of the Examiner's statements are conceded.

In view of the above, it is respectfully submitted that the present application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

Respectfully submitted,

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